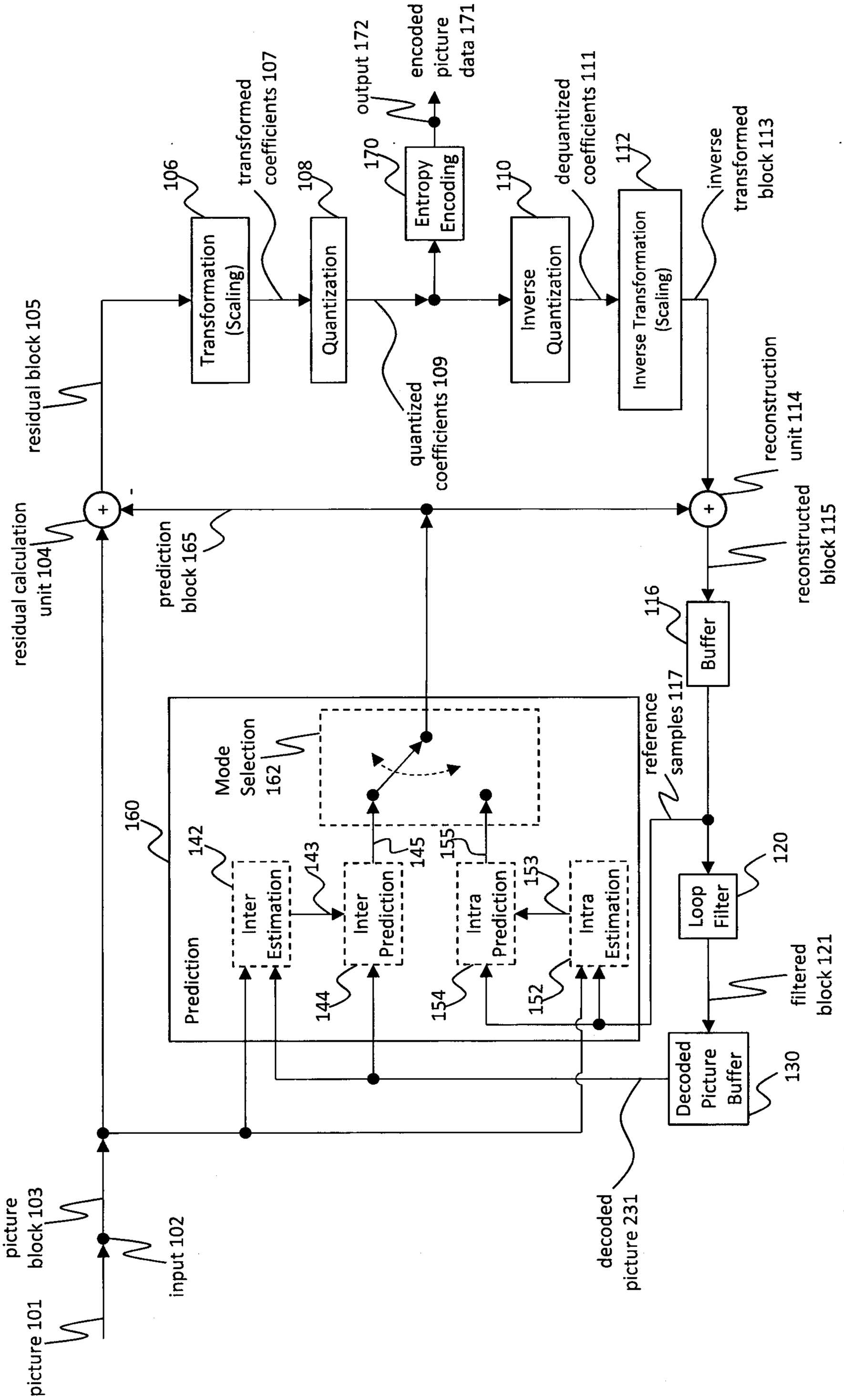
picture block 103
picture 101
input 102
residual block 105
residual calculation unit 104
prediction block 165
transformed coefficients 107
Transformation (Scaling)
106
Quantization
108
quantized coefficients 109
output 172
encoded picture data 171
Entropy Encoding
170
Inverse Quantization
110
dequantized coefficients 111
Inverse Transformation (Scaling)
112
inverse transformed block 113
reconstruction unit 114
reconstructed block 115
Buffer
116
reference samples 117
Loop Filter
120
filtered block 121
Decoded Picture Buffer
130
decoded picture 231
Prediction
160
Mode Selection
162
Inter Estimation
142
143
Inter Prediction
144
145
Intra Prediction
154
155
Intra Estimation
152
153
Encoder 100

Fig. 1

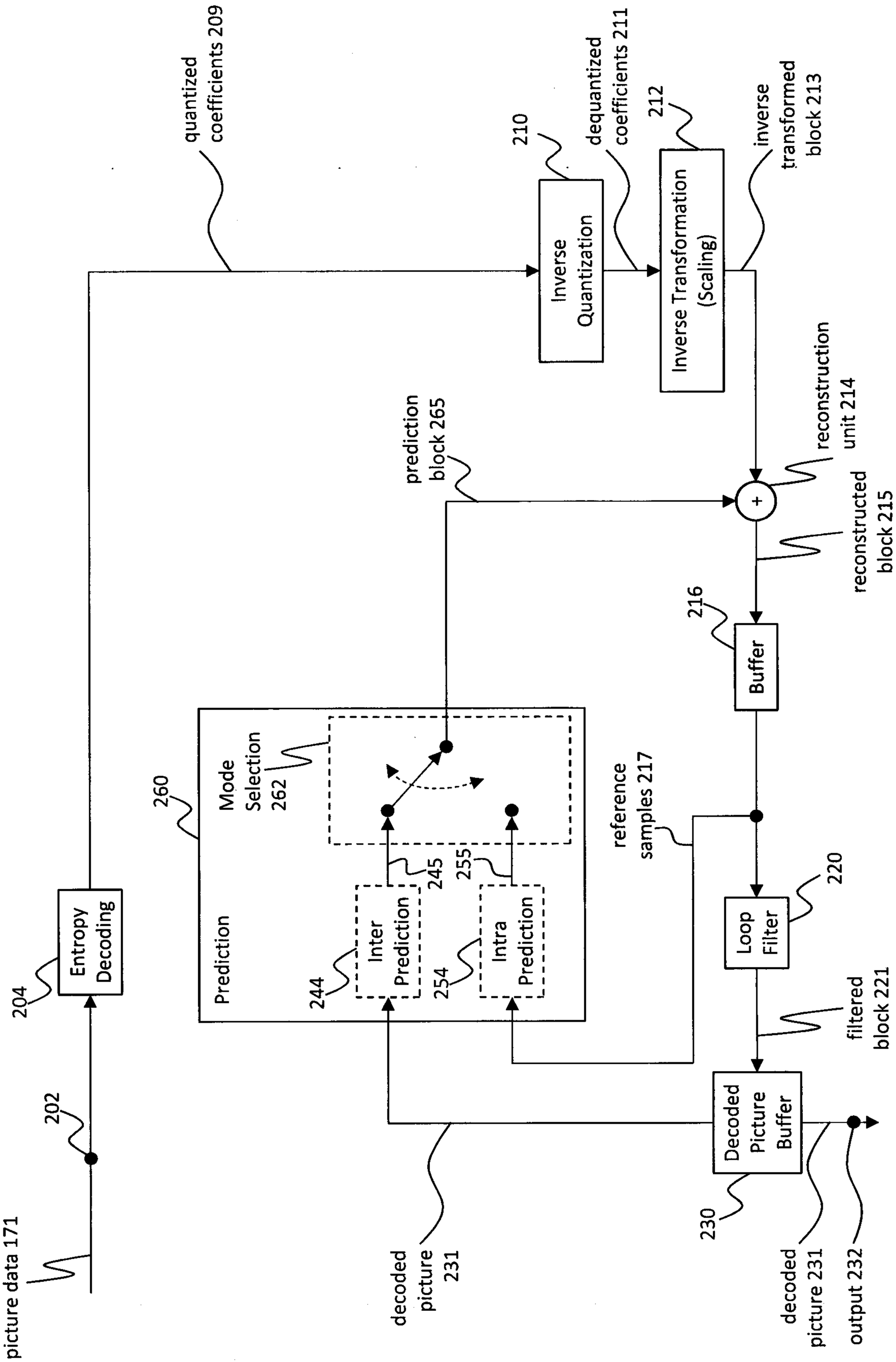
encoded picture data 171
202
Entropy Decoding
204
quantized coefficients 209
Inverse Quantization
210
dequantized coefficients 211
Inverse Transformation (Scaling)
212
inverse transformed block 213
reconstruction unit 214
reconstructed block 215
Buffer
216
Loop Filter
220
filtered block 221
Decoded Picture Buffer
230
decoded picture 231
output 232
Prediction
260
Mode Selection 262
Inter Prediction
244
Intra Prediction
254
245
255
prediction block 265
reference samples 217
decoded picture 231
Decoder 200

Fig. 2

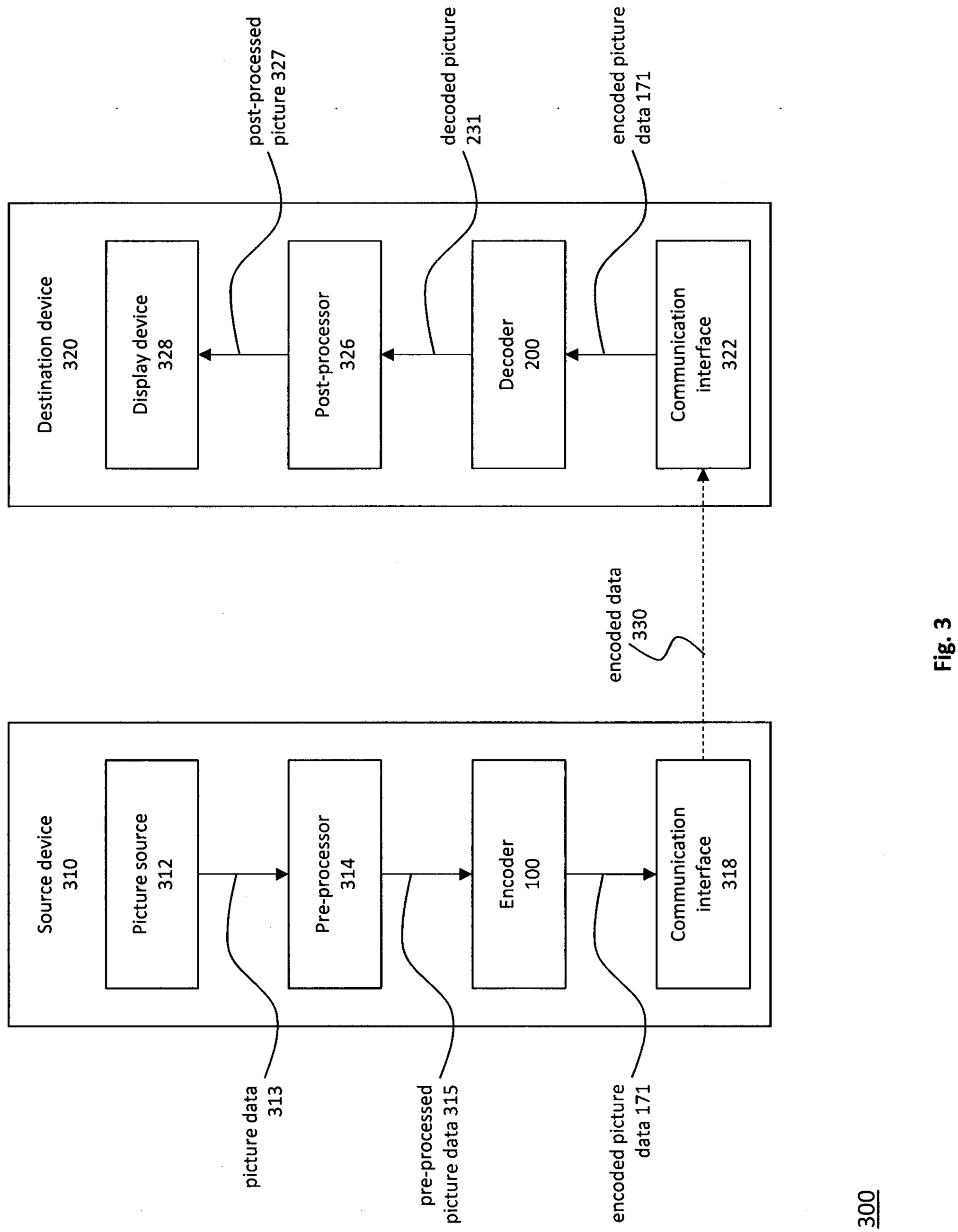
Source device
310
Picture source
312
Pre-processor
314
Encoder
100
Communication
interface
318
picture data
313
pre-processed
picture data 315
encoded picture
data 171
encoded data
330
Destination device
320
Display device
328
Post-processor
326
Decoder
200
Communication
interface
322
post-processed
picture 327
decoded picture
231
encoded picture
data 171
300

Fig. 3

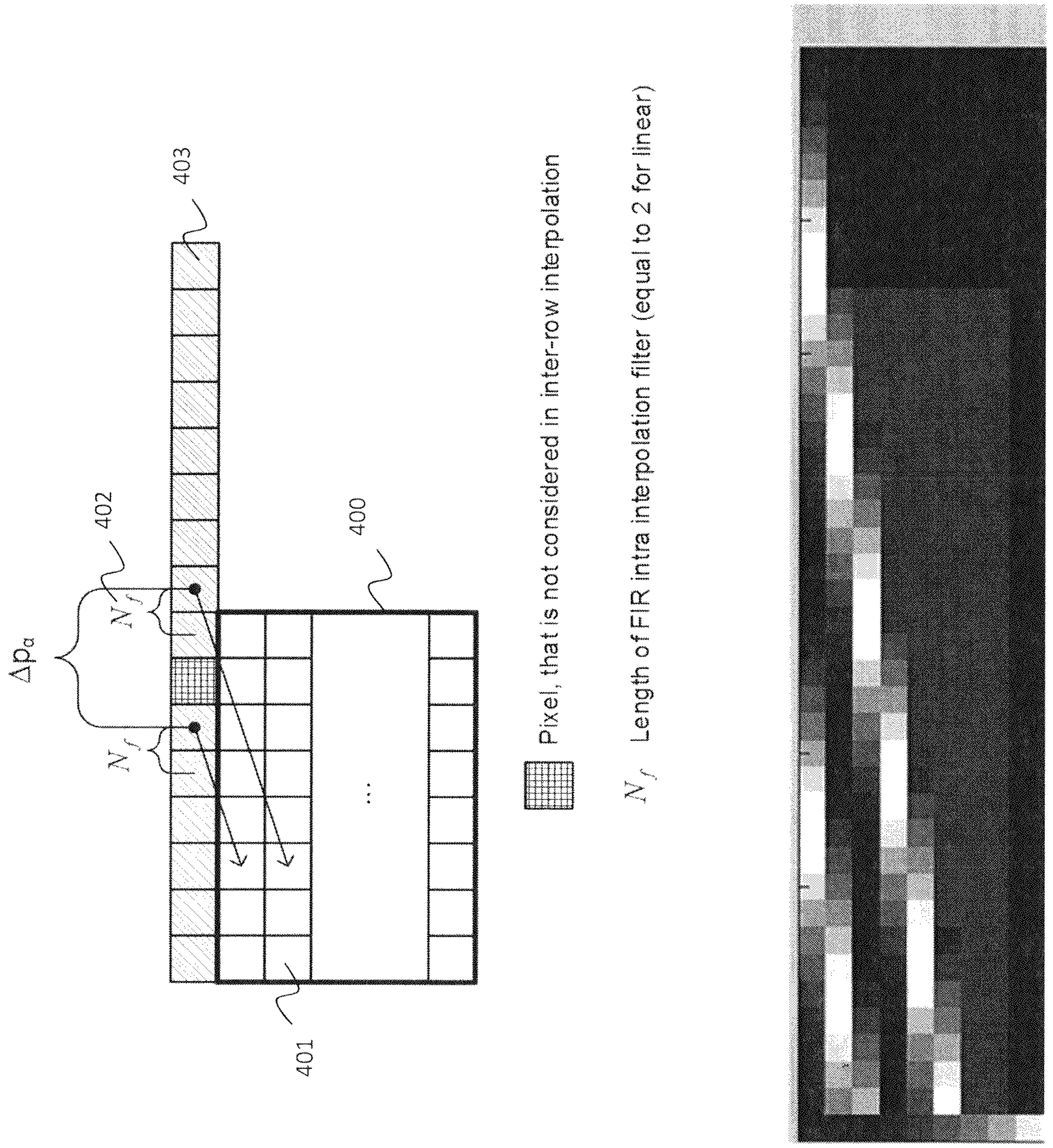
402
403
400
Δp_α
N_f
N_f
401
Pixel, that is not considered in inter-row interpolation
N_f Length of FIR intra interpolation filter (equal to 2 for linear)
(a)
(b)

Fig. 4

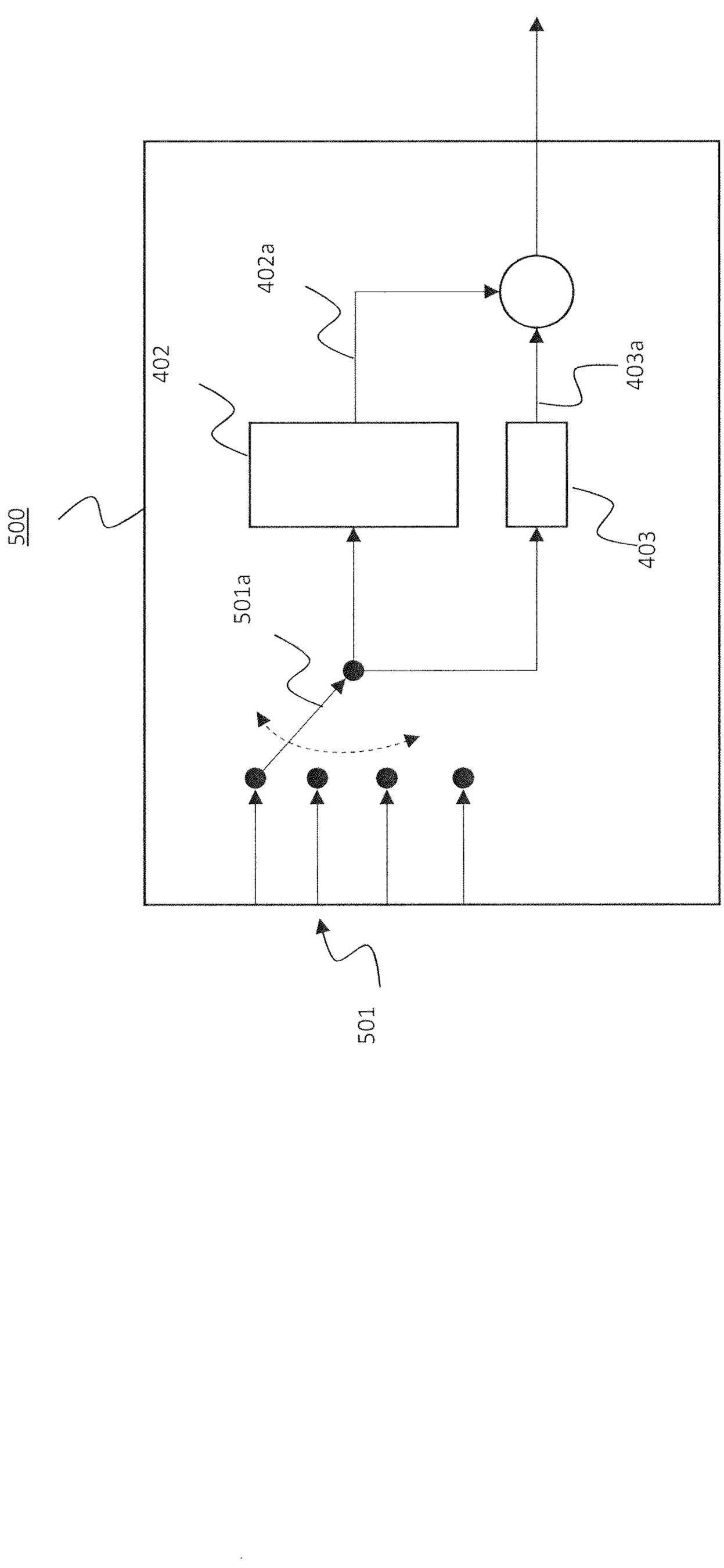

Fig. 5

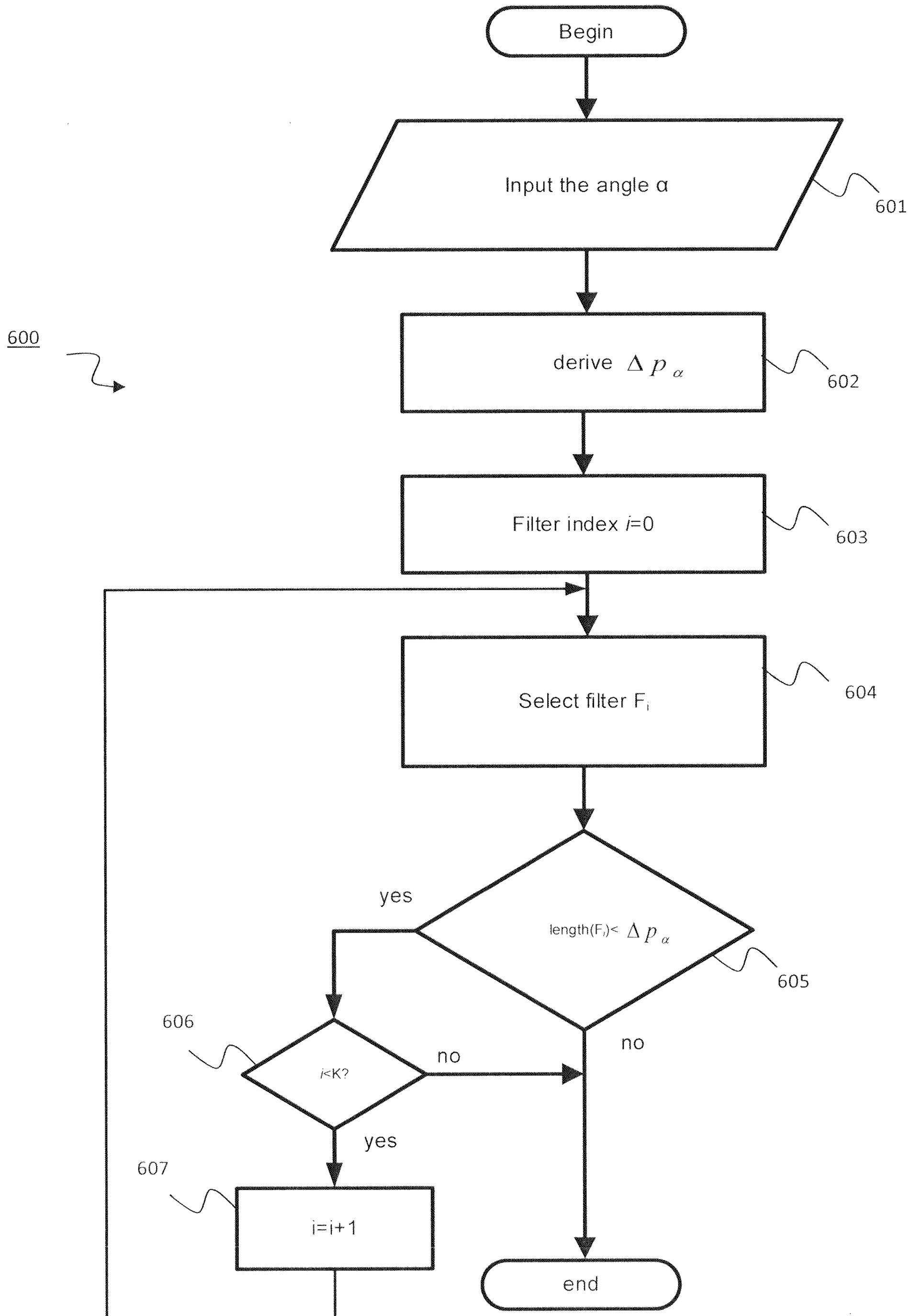
Begin
Input the angle α
601
600
derive Δp_α
602
Filter index i=0
603
Select filter F_i
604
yes
length(F_i)< Δp_α
605
606
i<K?
no
no
yes
607
i=i+1
end

Fig. 6

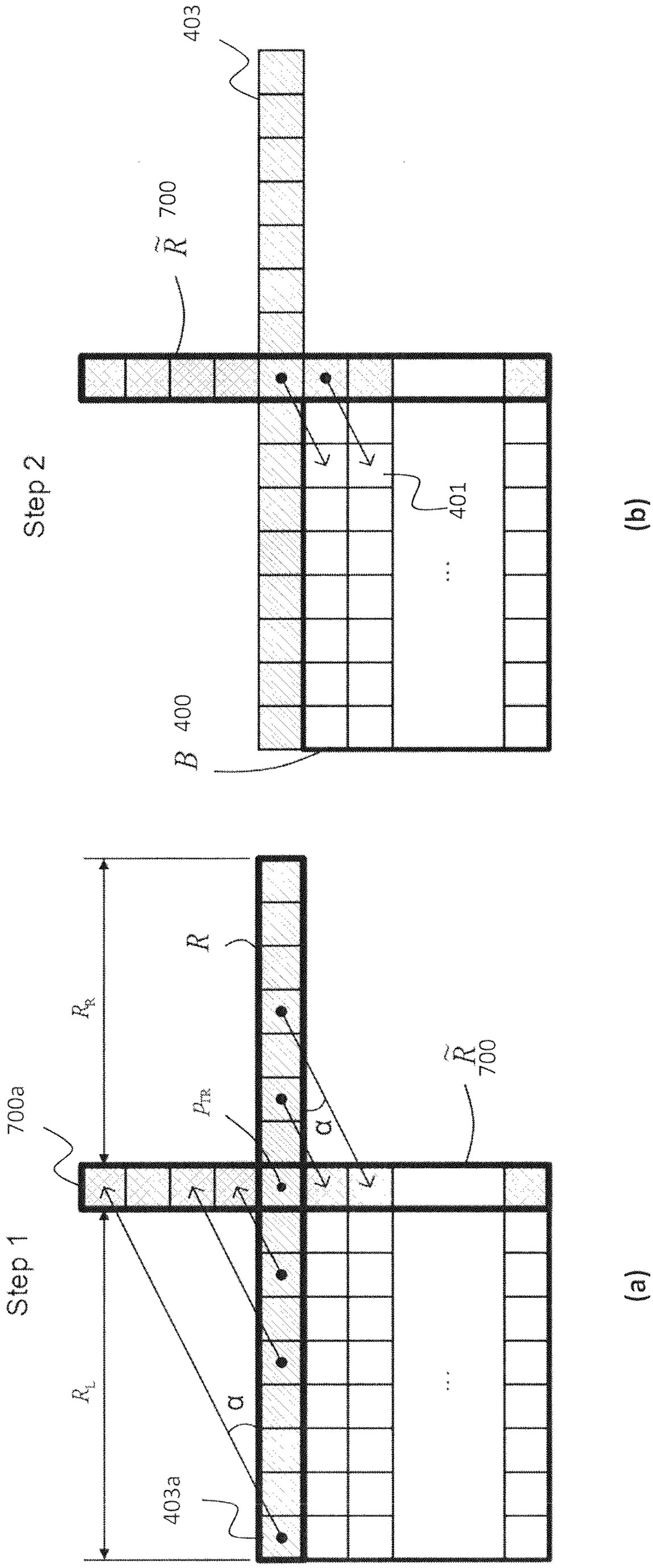
Step 1
700a
R_R
R
β_{TR}
α
$\tilde{R}$ 700
R_L
403a
Step 2
403
$\tilde{R}$ 700
B 400
401
(a)
(b)

Fig. 7

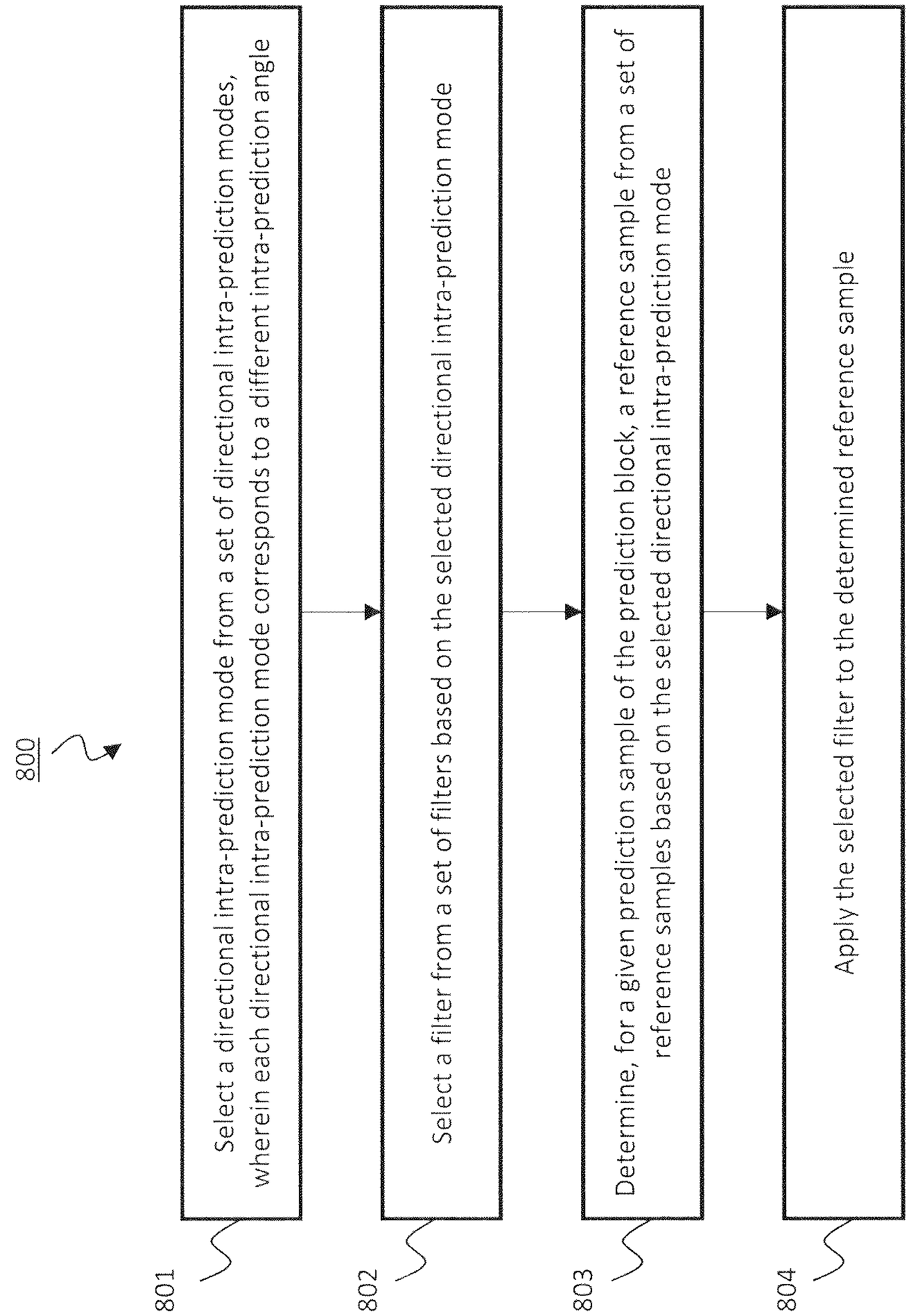
800
Select a directional intra-prediction mode from a set of directional intra-prediction modes, wherein each directional intra-prediction mode corresponds to a different intra-prediction angle
802
Select a filter from a set of filters based on the selected directional intra-prediction mode
804
Determine, for a given prediction sample of the prediction block, a reference sample from a set of reference samples based on the selected directional intra-prediction mode
806
Apply the selected filter to the determined reference sample
808

Fig. 8

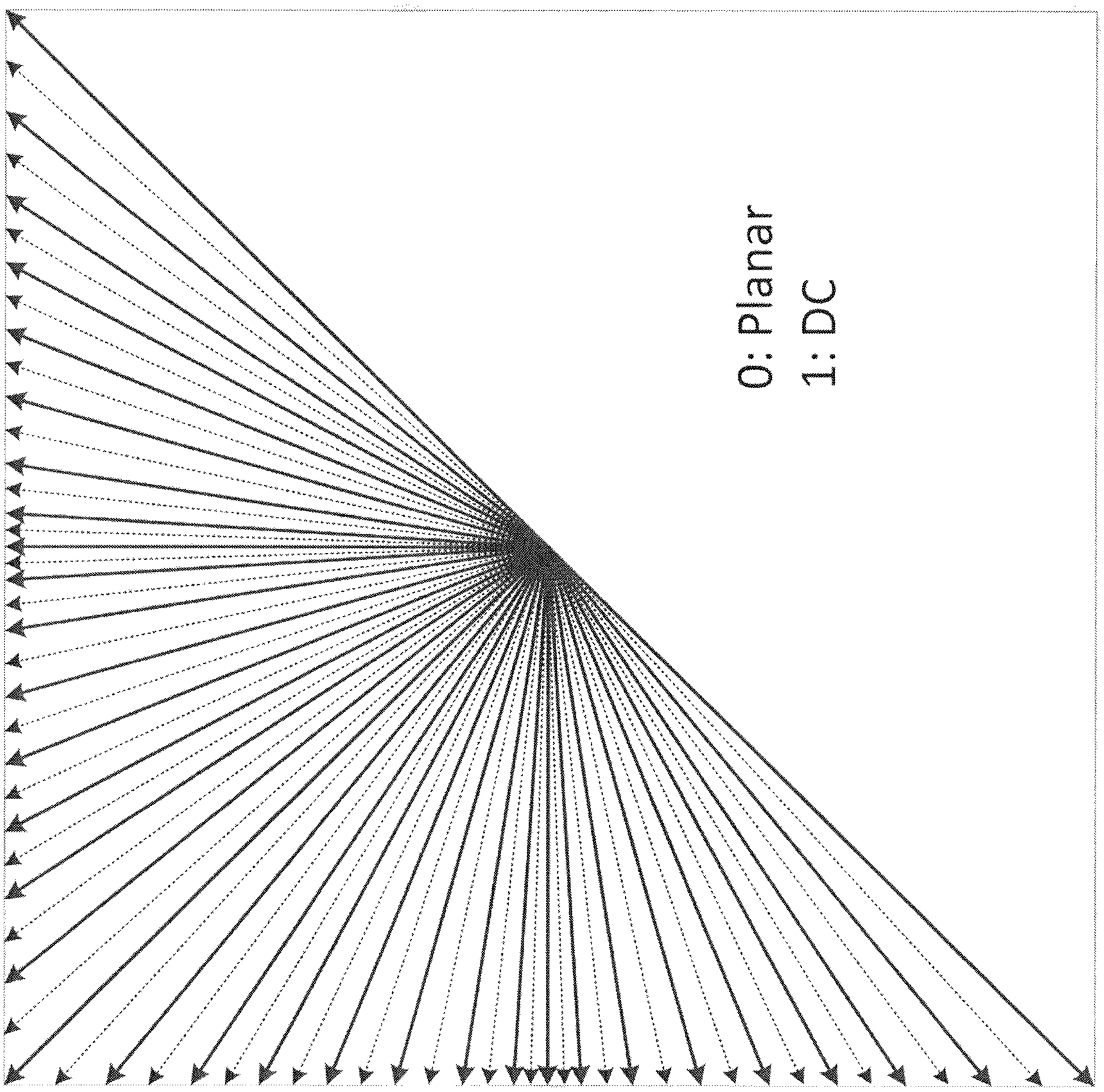

Fig. 9

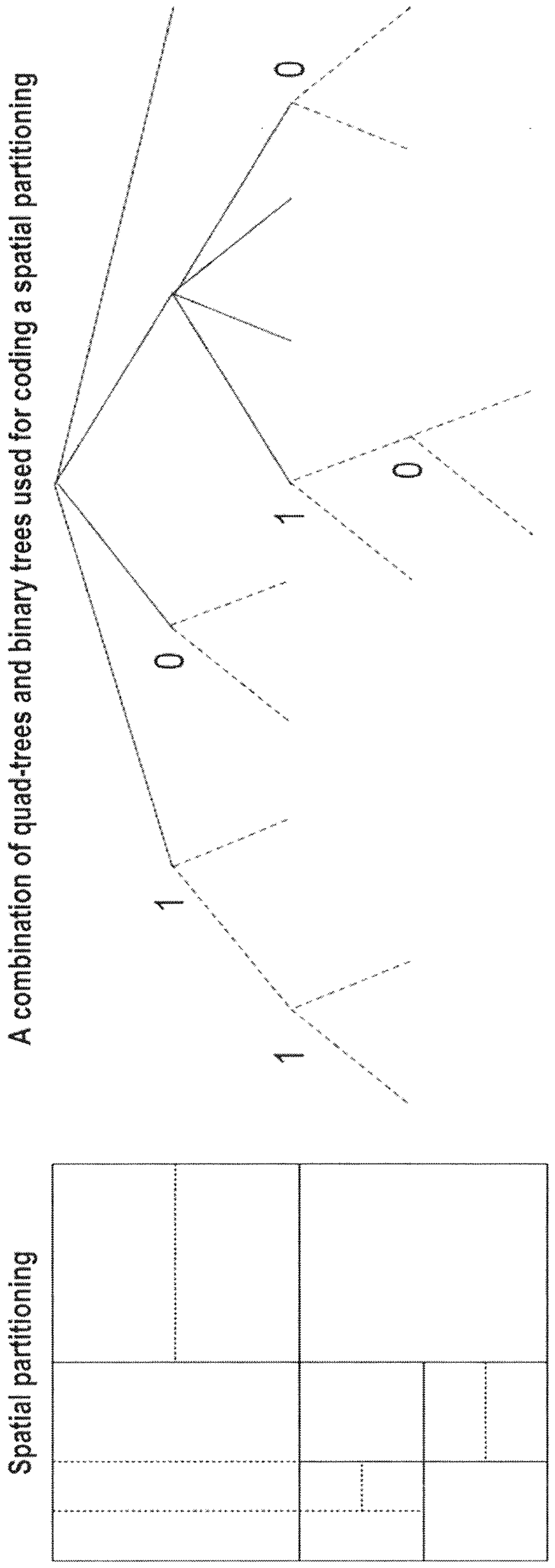
A combination of quad-trees and binary trees used for coding a spatial partitioning
Spatial partitioning
0
1
0
1
0
1
0
1
0

Fig. 10

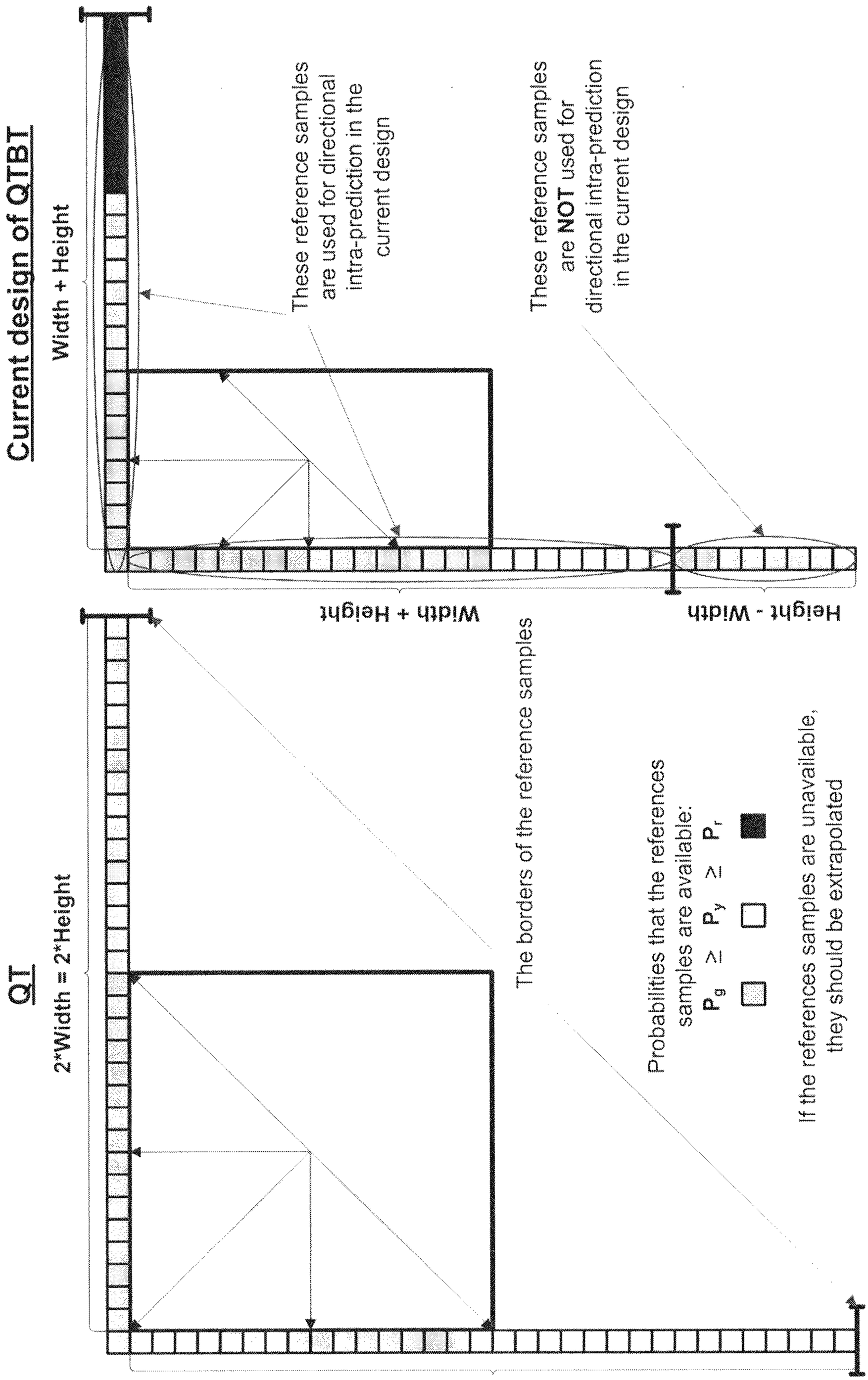
Current design of QTBT
Width + Height
These reference samples are used for directional intra-prediction in the current design
These reference samples are NOT used for directional intra-prediction in the current design
Height - Width
Width + Height
QT
2*Width = 2*Height
The borders of the reference samples
Probabilities that the references samples are available:
$P_g \geq P_y \geq P_r$
If the references samples are unavailable, they should be extrapolated
2*Width = 2*Height

Fig. 11

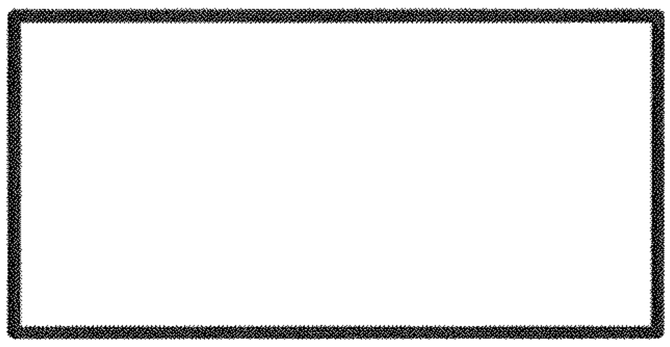

Fig. 12

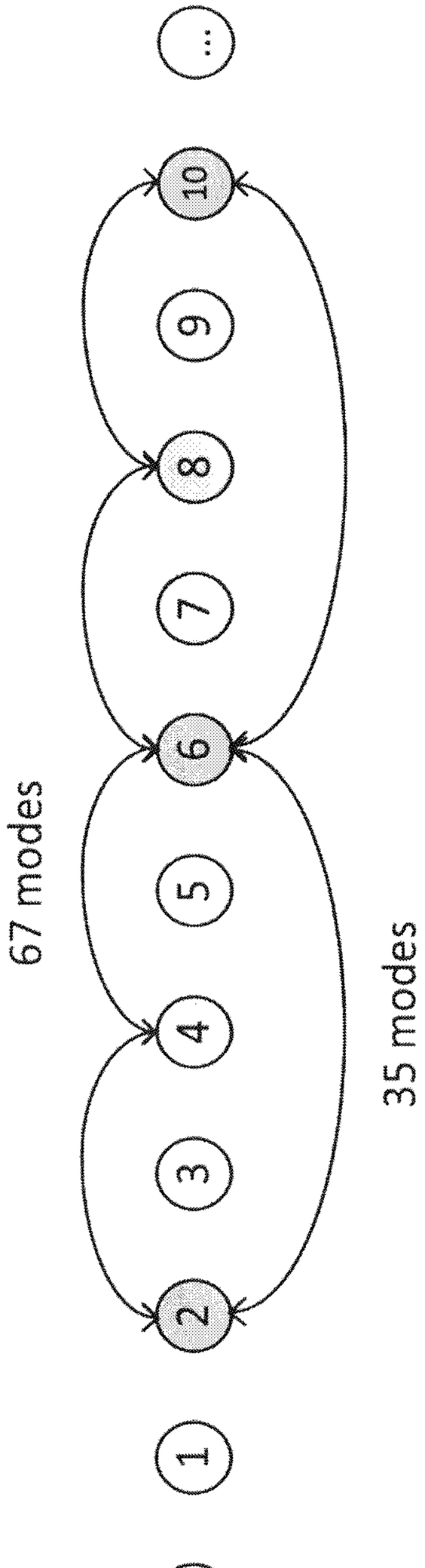

Fig. 13

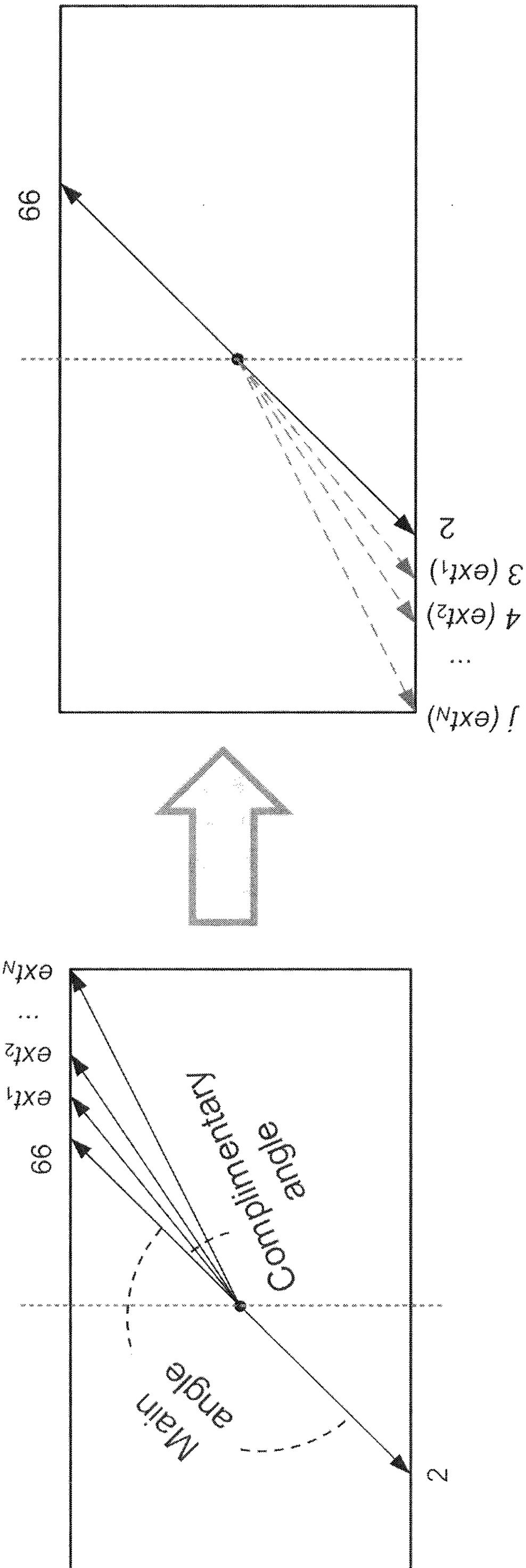
99
ext_1
ext_2
...
ext_N
Complimentary angle
Main angle
2
99
ext_1
ext_2
4
...
ext_N
2

Fig. 14

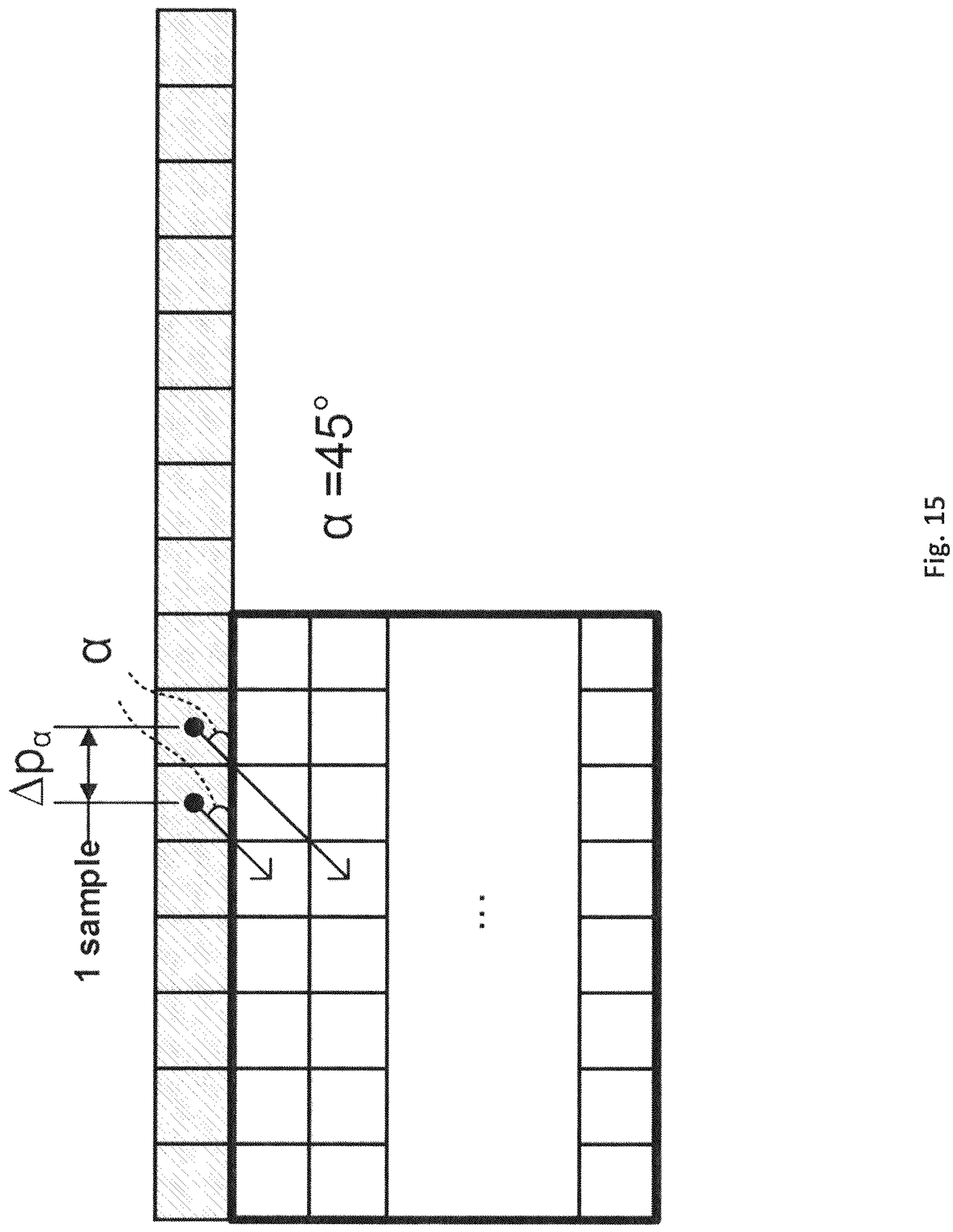

Fig. 15

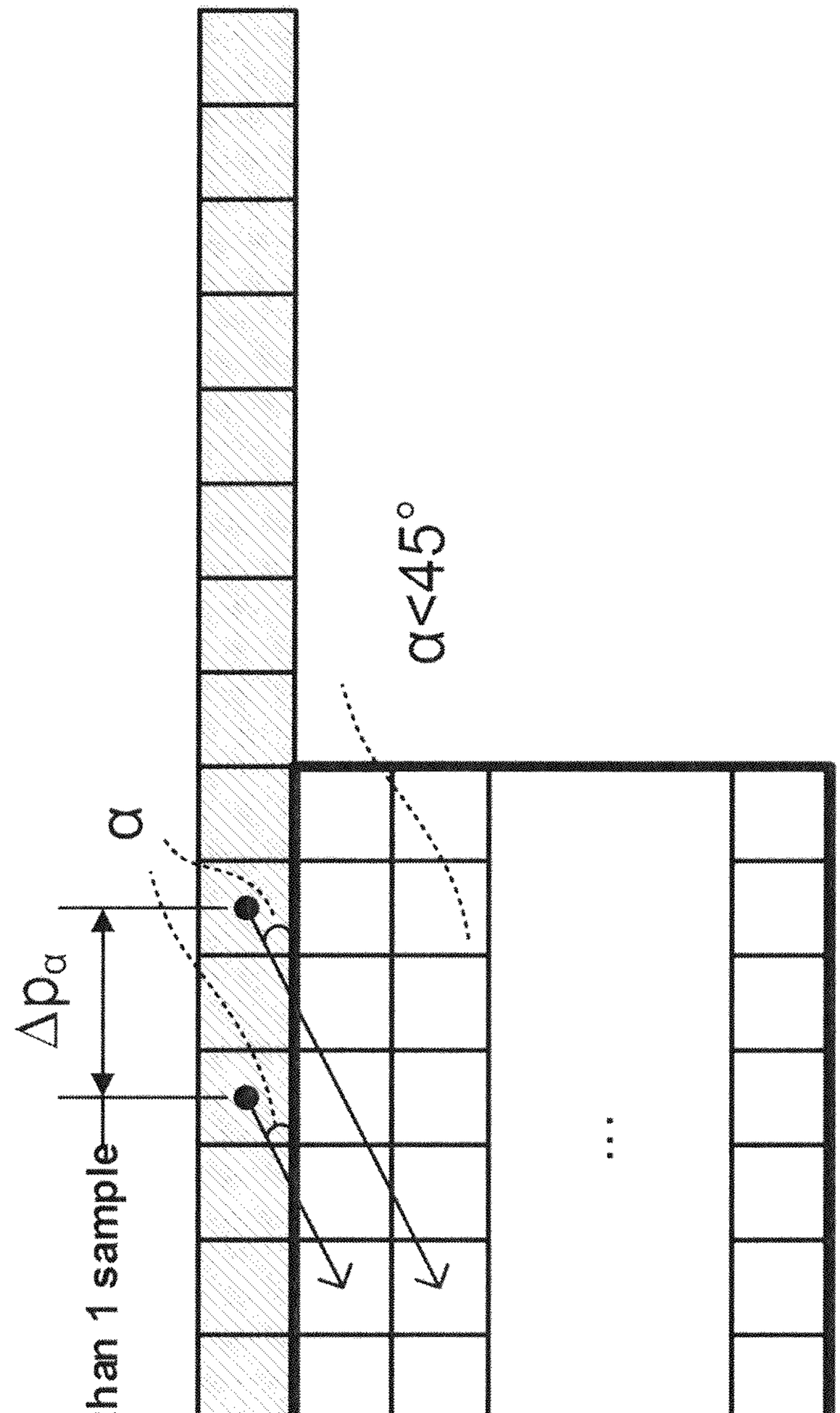

Fig. 16